

REMARKS

The Applicant thanks the Office for the consideration given the present application in the Detailed Action mailed 09/15/2004. The Applicant has endeavored to respond most properly to each of the points raised by the Office to ensure that the specification and claims now presented are allowable in all respects. With this in mind, the Applicant respectfully requests that the Office review and allow the current specification and claims.

Claim Rejection – 35 U.S.C. § 112

In the Detailed Action, the Office rejected claim 2 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The Office indicated that what is meant by the term “adhesion quantity” in claim 2 was not clearly understood since there was no clear definition provided or well known within the art.

In response, the Applicant notes that the term “adhesion quantity” as used in claim 2 is described more completely as “an adhesion quantity of coating is 20 to 300 g/m² on a one surface basis.” As such, claim 2 requires a range of coating—termed an adhesion quantity—on one surface of between 20 and 300 grams per square meter. The Applicant respectfully submits that it is clear, therefore, that the term “adhesion quantity” simply means the weight of coating applied to one surface of the “base steel sheet” per square meter. It is noted that the Office uses the term “adhesion quantity” in an identical manner in supporting its rejection of claim 2 for obviousness.

Since Applicant's above-described reading of claim 2 ensures that the claim is clear, definite, and distinct, the Applicant submits that claim 2 complies with 35 U.S.C. § 112. Accordingly, the Office's reconsideration and allowance of claim 2 in this regard are most respectfully requested.

Claim Rejections – 35 U.S.C. § 103

With respect to obviousness, the Office preliminarily rejected claims 1-4 as being unpatentable under 35 U.S.C § 103 over Japanese Patent No. 5,818,855 to Ito et al. ("Ito"). Additionally, claims 1-4 were rejected as being unpatentable over U.S. Patent No. 3,055,771 to Sprowl ("Sprowl").

Claim Rejections Based on Japanese Patent No. 5,818,855 to Ito et al.

In relation to Ito, the Office wrote that Ito teaches an aluminum-tin alloy for coating steel containing composition ranges of silicon (1-12%), magnesium (0.1-1%), and chromium (0.01-0.5%) and that Ito, therefore, teaches a range that overlaps Applicant's claimed range. Similarly in relation to claim 2, the Office wrote that the adhesion quantity taught by Ito is 30 g/m², which again overlaps Applicant's claimed range. Still further, the Office wrote that Ito discloses a plating temperature of 670 +/- 10 °C, which was said to read on Applicant's claimed bathing temperature.

In response, the Applicant notes that each of the present invention and the invention taught by Ito relates to a technique for aluminum-based melting plating. However, Ito teaches that each coating composition should include a quantity of zinc

(Zn). In each disclosed example in Ito, zinc (Zn) is invariably contained in the basic compositions of the plating baths. (See, e.g., Table 1 ~ 3 and Claims 1 ~ 4).

The Applicant has amended base claim 1 to define most clearly over Ito and all other prior art by inserting the phrase "consisting essentially of" prior to the listing of the contents of Applicant's coating composition. As such, amended claim 1 effectively excludes substantial quantities of zinc (Zn) from the claimed composition. The phrase "consisting essentially of" would be open to unlisted ingredients that do not affect the basic and novel properties of the invention. Conversely, however, it would exclude ingredients, including zinc (Zn), that would materially affect the basic and novel properties of the invention.

Since Applicant's claimed coating bath would not include zinc (Zn), the inclusion of zinc (Zn) in each example of the Ito invention establishes a basic and critical difference between Applicant's claimed invention and the cited art. In this regard, it will be noted that the addition of a particular element to a plating bath composition used in the melting plating field and the content of the particular element in the plating bath composition normally yields a remarkable variation in the properties of the plating bath composition and the coated substrate. The presence of a particular element in a plating bath composition has influence on the functions of other elements in the plating bath composition and the composition ratios of the other elements. Therefore, where two inventions have a composition difference based on the inclusion or non-inclusion of a given element, the resulting compositions are substantially different.

As a result, since the composition of Ito in each example comprises a coating composition including a quantity of zinc (Zn), the Applicant submits that Ito teaches away from Applicant's claimed invention by disclosing a composition that is fundamentally different from Applicant's invention as claimed in claim 1 where no zinc (Zn) is contained in the plating bath composition.

Therefore, the Applicant submits that the invention of claim 1 is neither taught nor suggested by Ito. The Applicant further submits that each of dependent claims 2 through 4 is patentable for all of the reasons that base claim 1 is patentable and because each adds additional patentable limitation thereto. With that in mind, the Applicant respectfully requests that the Office reconsider and allow independent claim 1 and dependent claims 2 through 4.

Claim Rejections Based on U.S. Patent No. 3,055,771 to Sprowl

The Applicant further submits that the invention set forth in claim 1 is neither taught nor suggested by Sprowl. Claim 1 specifies, among other things, that the coating bath is an "Al-Si-Cr-Mg bath composition with a Si content of 7 to 15 parts by weight, a Cr content of 0.5 to 1.5 parts by weight and a Mg content of 0.46 to 3.0 parts by weight." However, Sprowl teaches making an aluminum alloy coated steel sheet by dipping the steel sheet in a molten aluminum alloy bath containing Si, Cr, and Mg with an Si content of 1% to 6% by weight, a Cr content of 0.1% to 0.4% by weight, and a Mg content of 0.05% to 0.45% by weight.

Sprowl would be read most properly to teach away from the invention of claim 1 since it would discourage one skilled in the art from creating a bath with Applicant's presently claimed composition. For example, while Applicant claims a bath with a Mg content of 0.46 to 3.0 parts by weight, Sprowl declares that "[b]eyond a magnesium content of about 0.45% there is a tendency for the oxide film to produce a wrinkled and poor surface texture to the coating." (Col. 2, lines 27-30)

Furthermore, amended claim 1 requires a "Cr content of 0.5 to 1.5 parts by weight" while Sprowl teaches that a bath should have a "total *not* exceeding about 0.5%" of "at least one element selected from the group consisting of chromium, molybdenum and tungsten in amount from about 0.1 to 0.4%." (Col. 2, lines 8-11.) (Emphasis supplied.) Even further, amended claim 1 specifies a "Si content of 7 to 15 parts by weight." On the other hand, Sprowl would teach one skilled in the art to create a bath with "an alloy consisting essentially of by weight from 1 to 6% silicon"

Although the coating bath of Applicant's claimed invention would likely contain a small amount of inevitable impurities, it substantially consists of the claimed Al-Si-Cr-Mg bath composition. The coating bath of the claimed invention does not contain any other components (e.g., molybdenum or titanium) in addition to the claimed components. However, those components are essential in the aluminum alloy bath disclosed by Sprowl (See, e.g., Table 4).

The differences between Applicant's claimed composition and that taught by Sprowl yield notable differences in performance that further demonstrate the patentability of the invention as presently claimed. It will be noted that Sprowl states

merely that the surface *appearance* of the articles produced employing the Sprowl invention is superior to those of the prior art. (See, e.g., Col. 1, lines 51-72; Col. 2, line 1.) Notably, Sprowl fails to specifically illustrate the purported excellent appearance of resulting articles.

Sprowl does not purport to provide improvements in any properties other than surface appearance. For example, Sprowl does not attempt to address the performance properties, such as corrosiveness and processability, of the articles produced. However, Applicant's claimed composition does provide improvements in those and further properties.

Based on the foregoing, the Applicant submits that claim 1 patentably defines the scope of the invention for which protection is sought. Accordingly, the Applicant most respectfully requests that the Office reconsider and allow amended claim 1. The Applicant further submits that claims 2 through 4 are patentable over Sprowl for all of the reasons that base claim 1 is patentable and because they add further patentable limitation thereto. Therefore, their reconsideration and allowance are also respectfully requested.


Conclusion

In light of the above, the Applicant respectfully submits that all presently pending claims are directed to patentably nonobvious invention. With this in mind, the Office's reconsideration and allowance of the specification and claims are respectfully requested.

The Applicant believes that all issues raised in the Detailed Action have been responded to fully. However, if, after consideration of the above amendments and comments, there remain any open issues in this application that possibly can be resolved by a telephone interview, then the Applicant's undersigned attorney most respectfully requests that he be called to discuss and attempt to resolve those issues.

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Date

Respectfully submitted,



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